

Diatom zones (NPD)

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens 1. nodus
Actinocyclus Ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoptychus senarius
Actinoptychus vulgaris
Actinoptychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biredata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavifatus exiguis
Cavifatus jouseanus
Cavifatus lanceolatus
Cavifatus linearis
Cavifatus miocenicus
Cavifatus rectus
Cavifatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmolodiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsonii
Delphinella surirella
Delphinella spp.

Core, section, interval (cm)

U14 (9D-3H-CC)

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%) X (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamiae
Denticulopsis praelauta
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheleis bombus
Diplotheleis puella
Diplotheleis smithii
Diplotheleis suborbicularis
Diplotheleis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellebeckia sol
Ellebeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolichus
Fragilariopsis fossilia
Fragilariopsis oceanica
Fragilariopsis pilocoma
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Koizumiella tatsunokuchiensis
Koizumiella minor
Lisitzinia ornata
Mediaria magna
Mediaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatica
Neodenticula kolzumii
Neodenticula seminae
Nilzschia challengerii
Nilzschia jouseae
Nilzschia palea
Nilzschia reinholdii
Nilzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podostira stelligera
Porusira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbarba
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudoxiphidium americana
Pseudotriceratum radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 10

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 v/lvs/FOV)
F (>1 v/lv/10FOVs & <1 v/lv/10FOVs)
R (>3 v/lv/traverse & <1 v/lv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus ostrupili
Shionodiscus praeostrupili
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surrella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabeli
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yaboi
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

fragments

Diatom zones (NPD)

Undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
R Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoptychus senarius
Actinoptychus vulgaris
Actinoptychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadifata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguus
Cavitalus jouseaeus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus mioceneus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscindiscus asteromphalus
Coscindiscus marginatus
Coscindiscus oculus-iridis
Coscindiscus radiatus
Coscindiscus rhombicus
Coscindiscus symbolophorus
Cosmoldiscus insignis
Crudicentula ikebei
Crudicentula kanayae
Crudicentula nicobarica
Crudicentula paranicobarica
Crudicentula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboenensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonisenii
Delphinella surrella
Delphinella spp.

Core, section, interval (cm)

U14 19.D.5H2W100

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praethyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplothele bombus
Diplothele puelta
Diplothele smithii
Diplothele suborbicularis
Diplothele spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossile
Fragilaropsis oceanica
Fragilaropsis pilocana
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolizumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eliginis
Navicula lyrodes
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Podosira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimorpha elegans
Pseudonitzschia seriata
Pseudoxiphidium americanum
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 14

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiermalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargentii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Roccella gelida
Roccella praeintida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupill
Shionodiscus praeoestrupill
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
R Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marumjica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
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Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctetae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidiala divergens
Yoshidiala spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Silico - foto m -

Spondae II

Diatom zones (NPD)

Indet.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 19. D 5H4W100

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia prenudulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
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Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
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Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praethalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheleis bombus
Diplotheleis puella
Diplotheleis smithii
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Distephanosira spp.
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Ellerbeckia spp.
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Hyalodiscus spp.
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Kisseleviella ezoensis
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Kozloviella minor
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Medilaria splendida
Melosira albicans
Navicula elgivensis
Navicula lyrodes
Navicula menisculus
Navicula salinarum
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Nitzschia palea
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Nitzschia rolandii
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Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 18

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
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Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isoploca
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifultus
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Stephanopyxis horridus
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Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
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Thalassiosira fraga
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Thalassiosira grunowii
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Thalassiosira marujimica
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Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabeli
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Sp. org. T

Diatom zones (NPD)

B

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
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Achnanthes lanceolata
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Achnanthes spp.
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Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradifida
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavifitus exiguis
Cavifitus jouseanus
Cavifitus lanceolatus
Cavifitus linearis
Cavifitus miocenicus
Cavifitus rectus
Cavifitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinea angustata
Delphinea ischaboenensis
Delphinea kippae
Delphinea sachalinensis
Delphinea simonsenii
Delphinea surirella
Delphinea spp.

Core, section, interval (cm)

U14/9D-5A-CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simensem
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploaneis bombus
Diploaneis puelia
Diploaneis smithii
Diploaneis suborbicularis
Diploaneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eliginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciales
Proboscia barbol
Proboscia curvirostris
Protocladia interposta
Proboscia prebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudodixella americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ *v2*OBSERVER's NAME *AF SK IS*

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norvegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopatica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praesostrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umaciensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidiala divergens
Yoshidiala spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

drawn

Diatom zones (NPD)

NPD-12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Core, section, interval (cm)

U14 19D - 8H-1, 77-82 cm

bottom

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguum
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscindiscus asteromphalus
Coscindiscus marginatus
Coscindiscus oculus-iridis
Coscindiscus radiatus
Coscindiscus rhombicus
Coscindiscus symbolophorus
Cosmoldiscus insignis
Crudicenticula ikebei
Crudicenticula kanayae
Crudicenticula nicobarica
Crudicenticula paranicobarica
Crudicenticula sawanurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surrella
Delphineis spp.

R 2 T

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsonii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololoides
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilosa
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikeba tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kotzuma tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porusira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimorpha elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radosoreticulatum
Pyxidicula zabelinae

R 4

(90.8, 2.5)

X Nav. sp.

C 7XR 1

DATE: 2013/July/14

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

R 3
Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *semispina* T
Rhizosolenia norwegica

*Rhizosolenia paebergonii**Rhizosolenia setigera**Rhizosolenia spp.**Roperia tesselata**Rocella gelida**Rocella praenitida**Rocella semigelida**Rocella vigilans**Rouxia californica**Rouxia granda**Rouxia isopoca**Rouxia naviculoides**Rouxia obesa**Shionodiscus oestrupii* T*Shionodiscus paeoestrupii**Shionodiscus trifultus**Stephanopyxis dimorpha**Stephanopyxis horridus**Stephanopyxis turgis**Stephanopyxis spp.**Surirella spp.**Thalassionema bacillaris**Thalassionema nitzschioides* T*Thalassionema nitzschioides* var. *incurvatum**Thalassionema nitzschioides* var. *infatum**Thalassionema nitzschioides* var. *parvum**Thalassionema pseudonitzschioides**Thalassionema schraderi**Thalassionema spp.**Thalassiosira antiqua**Thalassiosira bioculata**Thalassiosira castanea**Thalassiosira convexa**Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica**Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida**Thalassiosira grunowii**Thalassiosira hyalina**Thalassiosira irregularis**Thalassiosira jacksonii**Thalassiosira jouseae**Thalassiosira leptopus**Thalassiosira lineata**Thalassiosira lusca**Thalassiosira manifesta**Thalassiosira marumica**Thalassiosira mediaconvexa**Thalassiosira minutissima**Thalassiosira miocenica**Thalassiosira nordenstkioldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenidulus**Thalassiosira praeybabei**Thalassiosira robusta**Thalassiosira sanctae**Thalassiosira singularis**Thalassiosira temperata**Thalassiosira umaoensis**Thalassiosira undulosa**Thalassiosira yabei**Thalassiosira spp.**Thalassiothrix longissima* T*Thalassiothrix spp.**Trachyneis aspera**Trachyneis spp.**Yoshidaia divergens**Yoshidaia spp.**Chaetoceros Resting Spores* TTOTAL OF VEGETATIVE CELLS 100

Dinos

15 25

2/32

3/100

Diatom zones (NPD)

Vndet.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Areniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bidentata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguum
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus mioceneus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radialis
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischabonensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surirella
Delphinella spp.

Core, section, interval (cm)

U14 19.D.9H2U100

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dolios
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilocema
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenula
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisztnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvostris
Proboscia interposita
Proboscia praearbarbi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudoxiphilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/14

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (> 10 valves/FOV), C (1-10 vlv/FOV)
 F (> 1 vlv/10FOVs & < 1 vlv/10FOVs)
 R (> 3 vlv/traverse & < 1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebengonii

Rhizosolenia setigera
Rhizosolenia spp.

Roperia tesselata

Rocella gelida

Rocella praeinitida

Rocella semigelida

Rocella vigilans

Rouxia californica

Rouxia granda

Rouxia isopatica

Rouxia naviculoides

Rouxia obesa

Shionodiscus oestrupili

Shionodiscus paeoestrupili

P *Shionodiscus trifulus*

Stephanopyxis dimorpha

Stephanopyxis horridus

Stephanopyxis turris

P *Stephanopyxis spp.*

Suriella spp.

Thalassionema bacillaris

Thalassionema nitzschiooides

Thalassionema nitzschiooides var. *incurvatum*

Thalassionema nitzschiooides var. *inflatum*

Thalassionema nitzschiooides var. *parvum*

Thalassionema pseudonitzschiooides

Thalassionema schraderi

Thalassionema spp.

Thalassiosira antiqua

Thalassiosira bioculata

Thalassiosira castanea

Thalassiosira convexa

Thalassiosira decipiens

Thalassiosira dubiosa

Thalassiosira eccentrica

Thalassiosira fasciculata

Thalassiosira fraga

Thalassiosira gravida

Thalassiosira grunwil

Thalassiosira hyalina

Thalassiosira irregularata

Thalassiosira jacksonii

Thalassiosira jouseae

Thalassiosira leptopus

Thalassiosira lineata

Thalassiosira lusca

Thalassiosira manifesta

Thalassiosira marujamica

Thalassiosira mediaconvexa

Thalassiosira minutissima

Thalassiosira miocenica

Thalassiosira nordenstkioldii

Thalassiosira orientalis

Thalassiosira praefraga

Thalassiosira praenidulus

Thalassiosira praeyabeli

Thalassiosira robusta

Thalassiosira sanctaeiae

Thalassiosira singularis

Thalassiosira temperata

Thalassiosira umaciensis

Thalassiosira undulosa

Thalassiosira yabeli

Thalassiosira spp.

Thalassiothrix longissima

Trachyneis aspera

Trachyneis spp.

Yoshidaia divergens

Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

4

Diatom zones (NPD)

NPD 42

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 19.D. 948W/00

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochetensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoptychus senarius
Actinoptychus vulgaris
Actinoptychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatibus exiguum
Cavatibus jouseanus
Cavatibus lanceolatus
Cavatibus linearis
Cavatibus miocenicus
Cavatibus rectus
Cavatibus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscindiscus asteromphalus
Coscindiscus marginatus
Coscindiscus oculus-iridis
Coscindiscus radiatus
Coscindiscus rhombicus
Coscindiscus symbolophorus
Cosmoldiscus insignis
Crudidenticula ikebei
Crudidenticula kanayae
Crudidenticula nicobarica
Crudidenticula paranicobarica
Crudidenticula sawanurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinis angustata
Delphinis ischaboenensis
Delphinis kippae
Delphinis sachalinensis
Delphinis simonsenii
Delphinis surrella
Delphinis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Diplolepis spp.
Diplolepis bombus
Diplolepis puella
Diplolepis smithii
Diplolepis suborbicularis
Diplolepis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilariopsis dololus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilosa
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kozuma tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eliginis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminaiae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia stelligera
Podosira glaciales
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudoxypilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 18

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargentii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isoploca
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujimica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabai
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

Under

TOTAL PRESERVATION

(G) (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 19D-9H-CC

TOTAL ABUNDANCE:

M (>80%), A (20-60%), C (5-20%)

F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpellia biraiana
Azpellia komurae
Azpellia nodulifera
Azpellia oligocenica
Azpellia praenodulifera
Azpellia salisburyana
Azpellia tabularis
Azpellia vetustissima
Azpellia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccneis californica
Coccneis costata
Coccneis scutellum
Coccneis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikabei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *mlnor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Diplolepis spp.
Diplolepis bombus
Diplolepis puella
Diplolepis smithii
Diplolepis suborbicularis
Diplolepis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearborai
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxis zabelinae

*fioram**fragments*

DATE: 2013/July/12

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia seligera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii F 3
Shionodiscus paeoestrupli
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida /
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabeti
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidalia divergens
Yoshidalia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

(G.A)
オストリルテータを信じます。

Diatom zones (NPD)

undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

全面良好

Core, section, interval (cm)

U14 19D 10H-4W 100 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 14

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros

Rhaphoneis spp.

Rhizosolenia hebetata f. hemialis

Rhizosolenia hebetata f. semispina

Rhizosolenia norwegica

Rhizosolenia praebicornutum

Rhizosolenia setigera

Roparia tessellata

Rocella gelida

Rocella praenitida

Rocella semigelida

Rocella vigilans

Rouxia californica

Rouxia granda

Rouxia isopolica

Rouxia naviculoides

Rouxia obesa

Shionodiscus oestrupii

Shionodiscus paeoestrupii

R 5 Shionodiscus trifolius

Stephanopyxis dimorpha

Stephanopyxis horridus

Stephanopyxis turris

Stephanopyxis spp.

Surirella spp.

Thalassionema bacillaris

Thalassionema nitzschiooides

Thalassionema nitzschiooides var. incurvatum

Thalassionema nitzschiooides var. inflatum

Thalassionema nitzschiooides var. parvum

Thalassionema pseudonitzschiooides

Thalassionema schraderi

Thalassionema spp.

Thalassiosira antiqua

Thalassiosira bioculata

Thalassiosira castanea

Thalassiosira convexa

Thalassiosira decipiens

Thalassiosira dubiosa

R 3 Thalassiosira eccentrica

Thalassiosira fasciculata

Thalassiosira fraga

Thalassiosira gravida

Thalassiosira grunowii

Thalassiosira hyalina

Thalassiosira irregularis

Thalassiosira jacksonii

Thalassiosira joussea

R 1 Thalassiosira leptopus

Thalassiosira lineata

Thalassiosira lusca

Thalassiosira manifesta

Thalassiosira marumica

Thalassiosira mediaconvexa

Thalassiosira minutissima

Thalassiosira miocenica

Thalassiosira nordenstkioldii

Thalassiosira orientalis

Thalassiosira praefraga

Thalassiosira praenidulus

Thalassiosira praeyabeli

Thalassiosira robusta

Thalassiosira sanctae

Thalassiosira singularis

Thalassiosira temperata

Thalassiosira umaoensis

Thalassiosira undulosa

R 2 Thalassiosira yabei

Thalassiothrix longissima

Trachyneis aspera

Trachyneis spp.

Yoshidai divergens

Yoshidai spp.

R 3 Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

30

Dino
closed copula

Diatom zones (NPD)

B
TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplytus senarius
Actinoplytus vulgaris
Actinoplytus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komrae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguum
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscindodiscus asteromphalus
Coscindodiscus marginatus
Coscindodiscus oculus-iridis
Coscindodiscus radiatus
Coscindodiscus rhombicus
Coscindodiscus symbolophorus
Cosmoldiscus insignis
Crudicentula ikebei
Crudicentula kanayae
Crudicentula nicobarica
Crudicentula paranicobarica
Crudicentula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, Interval (cm)

U14 19 D - ~~114-00~~ 114-00

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%) B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distaphanosira architecturalis
Distaphanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dolichos
Fragilaropsis fossilia
Fragilaropsis oceanica
Fragilaropsis pilocana
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kotzuma tatsunokuchiensis
Kozloviella minor
Lisztnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podostira stelligera
Porusa glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudoxypilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

12

DATE: 2013/July/

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Roella gelida
Roella praenitida
Roella semigelida
Roella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praesostrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeiabeli
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umiaeensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 15D - 14H-3W 21cm

DATE: 2013/July/ 14

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)

F (>1 vlv/10FOVs & <1 vlv/10FOVs)

R (>3 vlv/traverse & <1 vlv/10FOVs)

X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinophy whole senarius
Actinophy whole vulgaris
Actinophy whole spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bifradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolorum
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. dimorpha
Denticulopsis dimorpha var. areolata
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. minor
Denticulopsis praedimorpha var. praedimorpha
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonensis
Denticulopsis tammarus
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunota pectinalis var. minor
Eunota praeerupta var. praeerupta
Eunota spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossils
Fragilaropsis oceanica
Fragilaropsis pilocoma
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medularia magna
Medularia splendida
Melosira albicans
Navicula eligensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Poresira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

Chaetoceras Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

NPD 122

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, Interval (cm)

U14 19 D 14H-4W, 100um

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoptychus senarius
Actinoptychus vulgaris
Actinoptychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilatus exiguum
Cavilatus jouseanus
Cavilatus lanceolatus
Cavilatus linearis
Cavilatus miocenicus
Cavilatus rectus
Cavilatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella menehiniana
Cyclotella spp.
Cymbella cistula
Cymbella minutula
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboenensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsonii
Delphinella surrella
Delphinella spp.

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%) B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolicius
Fragilariopsis fossilia
Fragilariopsis oceanica
Fragilariopsis pilocana
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kolzoviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula alginensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumi
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbarol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixille americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/ 1X

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus ostrupili
Shionodiscus praesoestrupili
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surrella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira merulamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrichia longissima
Thalassiotrichia spp.
Trachyneis aspera
Trachyneis spp.
Yoshidalia divergens
Yoshidalia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Vhde

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens 1. nodus
Actinocyclus Ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus mioceneus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbophorus
Cosmidiscus Insignis
Crudicentula ikebei
Crudicentula kanayae
Crudicentula nicobarica
Crudicentula paranicobarica
Crudicentula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboonensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 9. D. 14HCC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praetorta
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelta
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolichus
Fragilariopsis fossile
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halanthpha costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kotzuma tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eliginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porusa glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbarbi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudoxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/

13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata I. *hemispha*
Rhizosolenia hebetata I. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus ostrupi
Shionodiscus praesoestrupi
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marumica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenea
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Sponge T

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

R 1 Achnanthes groenlandica
 Achnanthes inflata
 Achnanthes lanceolata
 Achnanthes lineariformis
 Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguum
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus mioceneus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischabonis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonensis
Delphinella surrella
Delphinella spp.

Core, section, interval (cm)

U14 19D 15H-2W, 37 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *arcuata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetypalina
Denticulopsis praekatayamiae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dolichos
Fragilaropsis fossile
Fragilaropsis oceanica
Fragilaropsis pilocana
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Koizumiella tatsunokuchiensis
Koziellia minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula alginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroli
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyxis zabelinae

DATE: 2013/July/18

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)R 2 Rhaphoneis amphiceros
 Rhaphoneis spp.
Rhizosolenia hebetata f. *semispina* T

Rhizosolenia norwegica

Rhizosolenia praebargentii

Rhizosolenia setigera

Rhizosolenia spp.

*Roperia tessellata**Roccella gelida**Roccella praenitida**Roccella semigelida**Roccella vigilans**Rouxia californica**Rouxia granda**Rouxia isopolica**Rouxia naviculoides**Rouxia obesa**Shionodiscus oestrupii* T*Shionodiscus praeoestrupii* T*Shionodiscus trifolius* T*Stephanopyxis dimorpha**Stephanopyxis horridus**Stephanopyxis turnis**Stephanopyxis spp.* T*Suriella spp.**Thalassionema bacillaris**Thalassionema nitzschioides* TEEET*Thalassionema nitzschioides* var. *incurvatum**Thalassionema nitzschioides* var. *infatum**Thalassionema nitzschioides* var. *parvum**Thalassionema pseudonitzschioides**Thalassionema schraderi*

Thalassionema spp.

*Thalassiosira antiqua**Thalassiosira bioculata**Thalassiosira castanea**Thalassiosira convexa**Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica* —*Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida* —*Thalassiosira grunowii**Thalassiosira hyalina**Thalassiosira irregularis**Thalassiosira jacksonii**Thalassiosira jouseae**Thalassiosira manifesta* —*Thalassiosira marujamica**Thalassiosira mediaconvexa**Thalassiosira minutissima**Thalassiosira miocenica**Thalassiosira nordenskioldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenudulus**Thalassiosira praeyabei**Thalassiosira robusta**Thalassiosira sanctaeiae**Thalassiosira singularis**Thalassiosira temporis**Thalassiosira umiacensis**Thalassiosira undulosa**Thalassiosira yabei**Thalassiothrix longistriata**Thalassiothrix spp.**Trachyneis aspera**Trachyneis spp.**Yoshidaea divergens**Yoshidaea spp.**Chaetoceros Resting Spores*

TOTAL OF VEGETATIVE CELLS

380/400vc

Diatom Silo

10/28 205/58 278/78
 ← → ← →
 9.0 10.0 11.0 12.0

Diatom zones (NPD)

NPD 13

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp. ↗
Actinocyclus curvatus ↗
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae ↗
Azpeitia nodulifera ↗ 4
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavithus exiguis
Cavithus jousseanus
Cavithus lanceolatus
Cavithus linearis
Cavithus miocenicus
Cavithus rectus
Cavithus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccneis californica
Coccneis costata
Coccneis scutellum
Coccneis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 19.D. 15Hc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelaeta
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus ↗ 1
Fragilaropsis dololus
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tonkini
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Lisitzinia omata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka ↗ 17
Neodenticula kolzumii
Neodenticula seminae ↗ 17
Nitzschia challengeri
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata ↗ 17
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia senata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

closed copula +
foram -silice 7
sponge ↗ 17

DATE: 2013/July/ 13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

R *Raphoneis amphiceros*
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis* ↗ 2
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia seligera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifultus ↗
Stephanopyxis dimorpha
Stephanopyxis horridus ↗
Stephanopyxis turris
Stephanopyxis spp. ↗ 24
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides ↗ 16
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum* ↗ 3
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida ↗ 6
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira joussea
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabeiae
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umiacensis
Thalassiosira undulosa
Thalassiosira yabel ↗
Thalassiosira spp. ↗
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp. ↗
Chaetoceros Resting Spores ↗ 29
TOTAL of VEGETATIVE CELLS 100

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

FRAGMENT

Core, section, interval (cm)

U14 19 D-16H-1W 55 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

*Achnanthes groenlandica**Achnanthes inflata**Achnanthes lanceolata**Achnanthes lineariformis**Achnanthes spp.**Actinocyclus curvatus**Actinocyclus ellipticus**Actinocyclus ingens**Actinocyclus ingens f. nodus**Actinocyclus ingens f. planus**Actinocyclus oculatus**Actinocyclus ochotensis**Actinocyclus octonarius**Actinocyclus robustus**Actinocyclus tsugaruensis**Actinocyclus spp.**Actinopytchus senarius**Actinopytchus vulgaris**Actinopytchus spp.**Araniscus lewisanus**Araniscus spp.**Asteromphalus darwinii**Asteromphalus oligocenicus**Asteromphalus parvulus**Asteromphalus robustus**Asteromphalus spp.**Azpeitia briadista**Azpeitia komurae**Azpeitia nodulifera**Azpeitia oligocenica**Azpeitia praenodulifera**Azpeitia salisburyana**Azpeitia tabularis**Azpeitia velutissima**Azpeitia spp.**Bacterosira bathyomphala**Bacterosira fragilis**Bacterosira spp.**Cavithus exiguis**Cavithus jouseanus**Cavithus lanceolatus**Cavithus linearis**Cavithus miocenicus**Cavithus rectus**Cavithus spp.**Cestodiscus kugleri**Cestodiscus trochus**Cestodiscus spp.**Coccoeis californica**Coccoeis costata**Coccoeis scutellum**Coccoeis spp.**Coscinodiscus asteromphalus**Coscinodiscus marginatus**Coscinodiscus oculus-iridis**Coscinodiscus radiatus**Coscinodiscus rhombicus**Coscinodiscus symbolorhus**Cosmoldiscus insignis**Crucidicula ikebei**Crucidicula kanayae**Crucidicula nicobarica**Crucidicula paranicobarica**Crucidicula sawamurae**Cyclotella striata**Cyclotella meneghiniana**Cyclotella spp.**Cymbella cistula**Cymbella minuta**Cymbella subaequalis**Cymbella spp.**Delphinella angustata**Delphinella ischaboenensis**Delphinella kippae**Delphinella sachalinensis**Delphinella simonsenii**Delphinella surirella**Delphinella spp.**Denticulopsis crassa**Denticulopsis dimorpha var. dimorpha**Denticulopsis dimorpha var. areolata**Denticulopsis hustedtii**Denticulopsis hyalina**Denticulopsis katayamiae**Denticulopsis lauta**Denticulopsis praedimorpha var. minor**Denticulopsis praedimorpha var. praedimorpha**Denticulopsis praetyalina**Denticulopsis praekatayamiae**Denticulopsis praelata**Denticulopsis simonsenii**Denticulopsis tanimurae**Denticulopsis vulgaris**Diploneis spp.**Diplotheia bombus**Diplotheia puella**Diplotheia smithii**Diplotheia suborbicularis**Diplotheia spp.**Distephanosira architecturalis**Distephanosira spp.**Ellerbeckia sol**Ellerbeckia spp.**Eunotia pectinalis var. minor**Eunotia praerupta var. praerupta**Eunotia spp.**Fragilaria construens**Fragilaria spp.**Fragilaropsis cylindrus**Fragilaropsis dololius**Fragilaropsis fossile**Fragilaropsis oceanica**Fragilaropsis pilocoma**Fragilaropsis spp.**Goniothecium decoratum**Goniothecium rogersii**Grammatophora spp.**Halamphora costata**Hyalodiscus obsoletus**Hyalodiscus spp.**Ikebea tenuis**Kisseleviella carina**Kisseleviella ezoensis**Kolzumia tatsunokuchiensis**Kozloviella minor**Liszitnia ornata**Medilaria magna**Medilaria splendida**Melosira albicans**Navicula eliginensis**Navicula lyroides**Navicula menisculus**Navicula salinarum**Neodenticula kantschikata**Neodenticula kolzumii**Neodenticula seminaea**Nitzschia challengerii**Nitzschia joussea**Nitzschia palea**Nitzschia reinholdii**Nitzschia rolandii**Odontella aurita**Odontella spp.**Paralia sulcata**Paralia spp.**Podosira stelligera**Porosira glacialis**Proboscia barbol**Proboscia curvirostris**Proboscia interposta**Proboscia praearborai**Pseudodimmerogramma elegans**Pseudonitzschia seriata**Pseudoxypilla americana**Pseudotriceratium radiosoreticulatum**Pyxidicula zabelinae*

DATE: 2013/July/14

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 valves/FOV)

F (>1 valve/10FOVs & <1 valve/10FOVs)

R (>3 valves/traverse & <1 valve/10FOVs)

X (present), B (barren)

*Raphoneis amphiceros**Raphoneis spp.**Rhizosolenia hebetata f. hemispha**Rhizosolenia norwegica**Rhizosolenia praebengonii**Rhizosolenia setigera**Rhizosolenia spp.**Roperia tesselata**Rocella gelida**Rocella praenidida**Rocella semigelida**Rocella vigilans**Rouxia californica**Rouxia granda**Rouxia isopatica**Rouxia naviculoides**Rouxia obesa**Shionodiscus oestrupil**Shionodiscus praeoestrupil**Shionodiscus trifilatus**Stephanopyxis dimorpha**Stephanopyxis horridus**Stephanopyxis turris**Stephanopyxis spp.**Suriella spp.**Thalassionema bacillaris**Thalassionema nitzschioides**Thalassionema nitzschioides var. incurvatum**Thalassionema nitzschioides var. inflatum**Thalassionema nitzschioides var. parvum**Thalassionema pseudonitzschioide**Thalassionema schraderi**Thalassionema spp.**Thalassiosira antiqua**Thalassiosira bioculata**Thalassiosira castanea**Thalassiosira convexa**Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica**Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida**Thalassiosira grunwil**Thalassiosira hyalina**Thalassiosira irregularata**Thalassiosira jacksonii**Thalassiosira jouseae**Thalassiosira leptopus**Thalassiosira lineata**Thalassiosira lusca**Thalassiosira manifesta**Thalassiosira marujamica**Thalassiosira mediaconvexa**Thalassiosira minutissima**Thalassiosira miocenica**Thalassiosira nordenstkioldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenidulus**Thalassiosira praeybæli**Thalassiosira robusta**Thalassiosira sanctetiae**Thalassiosira singularis**Thalassiosira temperata**Thalassiosira umaoiensis**Thalassiosira undulosa**Thalassiosira yabei**Thalassiosira spp.**Thalassiothrix longissima**Thalassiothrix spp.**Trachyneis aspera**Trachyneis spp.**Yoshidaiia divergens**Yoshidaiia spp.**Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS*

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

R 3) 50 級

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilatus exiguis
Cavilatus jouseanus
Cavilatus lanceolatus
Cavilatus linearis
Cavilatus mioceneus
Cavilatus rectus
Cavilatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crudicentula ikebei
Crudicentula kanayae
Crudicentula nicobarica
Crudicentula paranicobarica
Crudicentula sawanurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Deltipheneis angustata
Deltipheneis ischabonis
Deltipheneis kippae
Deltipheneis sachalinensis
Deltipheneis simonsenii
Deltipheneis surrella
Deltipheneis spp.

Core, section, interval (cm)

U14 19D 16H-2W, 22 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 1X

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

*Rhaphoneis amphiceros**Rhaphoneis spp.**Rhizosolenia hebetata f. hiemalis* F*Rhizosolenia norwegica**Rhizosolenia paebergonii**Rhizosolenia setigera**Rhizosolenia spp.**Roperia tesselata**Rocella gelida**Rocella praenitida**Rocella semigelida**Rocella vigilans**Rouxia californica**Rouxia granda**Rouxia isopoca**Rouxia naviculoides**Rouxia obesa**Shionodiscus oestrupill**Shionodiscus paeoestrupill**R 3 Shionodiscus trifolius* F*Stephanopyxis dimorpha**Stephanopyxis horridus**R 4 Stephanopyxis turnis* —*R 5 Stephanopyxis spp.* JE*Suriella spp.**Thalassionema bacillaris**Thalassionema nitzschioides* JET F*Thalassionema nitzschioides var. incurvatum**Thalassionema nitzschioides var. inflatum**Thalassionema nitzschioides var. parvum**Thalassionema pseudonitzschioides**Thalassionema schraderi**Thalassionema spp.**Thalassiosira antiqua**Thalassiosira bioculata**Thalassiosira castanea**Thalassiosira convexa**Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica**Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida**Thalassiosira grunowii**Thalassiosira hyalina**Thalassiosira irregularis**Thalassiosira jacksonii**Thalassiosira jouseae**Thalassiosira leptopus* —*Thalassiosira lineata**Thalassiosira lusca**X Thalassiosira manifesta* **Thalassiosira marjamica**Thalassiosira mediaconvexa**Thalassiosira minutissima**Thalassiosira miocenica**Thalassiosira nordenstkioldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenidulus**Thalassiosira praeyabei**Thalassiosira robusta**Thalassiosira sanctetiae**Thalassiosira singularis**Thalassiosira temperata**Thalassiosira umaiensis**Thalassiosira undulosa**Thalassiosira yabei**Thalassiosira spp.**Thalassiothrix longissima**Thalassiothrix spp.**Trachyneis aspera**Yoshidalia divergens**Yoshidalia spp.**F Chaetoceros Resting Spores**30 50 vc**TOTAL OF VEGETATIVE CELLS*

closed

27 36 50
 → ← ↗ → ←
 11.0 12.0 13.0 14.0 15.0 16.0

Diatom zones (NPD)

NPDR

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus T 3
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius - 1
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bireadata
Azpeitia komurae
Azpeitia nodulifera - 1
Azpeitia oligocenica
Azpeitia paenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavifatus exiguis
Cavifatus jouseanus
Cavifatus lanceolatus
Cavifatus linearis
Cavifatus miocenicus
Cavifatus rectus
Cavifatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscindodiscus asteromphalus
Coscindodiscus marginatus
Coscindodiscus oculus-iridis
Coscindodiscus radiatus
Coscindodiscus rhombicus
Coscindodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenica
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 19. D. 16 HCC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheleis bombus
Diplotheleis puelia
Diplotheleis smithii
Diplotheleis suborbicularis
Diplotheleis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus T 2
Hyalodiscus spp.
Ikebaea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eliginis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae T 17-13
Nitzschia challenger
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata T 17-17-17-37
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia prebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis* T 2
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isoploca
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii - 1
Shionodiscus praesostrupii
Shionodiscus trifultus T 5
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp. T 17-17-19
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschioides T 6
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infundatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida T 6
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaiensis
Thalassiosira undulosa
Thalassiosira yabei T 2
Thalassiosira spp. T 2
Thalassiothrix longissima T 2
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

F *Chaetoceros Resting Spores* TEEEEE-31
 TOTAL of VEGETATIVE CELLS

Sponge TEEEEE-T

- 100 -

closed copula?

silico T

651

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 19.12.17 HCC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus obohensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpellia bifida
Azpellia komurae
Azpellia nodulifera
Azpellia oligocenica
Azpellia praenodulifera
Azpellia salisburyana
Azpellia tabularis
Azpellia velutissima
Azpellia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jousseaum
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolorhus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilicena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikedaia tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligens
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jousseaum
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia senilis
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/ 13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia seligera
Rhizosolenia spp.
Reperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praesoestrupili
Shionodiscus trifulus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jousseaum
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctissae
Thalassiosira singularis
Thalassiosira temperos
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidala divergens
Yoshidala spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Benthic

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica

*Achnanthes inflata**Achnanthes lanceolata**Achnanthes lineariformis**Achnanthes* spp.*Actinocyclus curvatus**Actinocyclus ellipticus**Actinocyclus ingens**Actinocyclus ingens f. nodus**Actinocyclus ingens f. planus**Actinocyclus ocellatus**Actinocyclus ochotensis**Actinocyclus octonarius**Actinocyclus robustus**Actinocyclus tsugaruensis**Actinocyclus* spp.*Actinopychus senarius**Actinopychus vulgaris**Actinopychus* spp.*Araniscus lewisanus**Araniscus* spp.*Asteromphalus darwinii**Asteromphalus oligocenicus**Asteromphalus parvulus**Asteromphalus robustus**Asteromphalus* spp.*Azpeitia biraedita**Azpeitia komurae**Azpeitia nodulifera**Azpeitia oligocenica**Azpeitia praenodulifera**Azpeitia salisburyana**Azpeitia tabularis**Azpeitia vetustissima**Azpeitia* spp.*Bacterosira bathyomphala**Bacterosira fragilis**Bacterosira* spp.*Cavatibus exiguus**Cavatibus jouseanus**Cavatibus lanceolatus**Cavatibus linearis**Cavatibus mioceneicus**Cavatibus rectus**Cavatibus* spp.*Cestodiscus kugleri**Cestodiscus trochus**Cestodiscus* spp.*Coccoeis californica**Coccoeis costata**Coccoeis scutellum**Coccoeis* spp.*Coscinodiscus asteromphalus**Coscinodiscus marginatus**Coscinodiscus oculus-iridis**Coscinodiscus radiatus**Coscinodiscus rhombicus**Coscinodiscus symbolophorus**Cosmoldiscus insignis**Crucidenticula ikebei**Crucidenticula kanayae**Crucidenticula nicobarica**Crucidenticula paranicobarica**Crucidenticula sawamurae**Cyclotella striata**Cyclotella meneghiniana**Cyclotella* spp.*Cymbella cistula**Cymbella minuta**Cymbella subaequalis**Cymbella* spp.*Delphineis angustata**Delphineis ischaboenensis**Delphineis kippae**Delphineis sachalinensis**Delphineis simonsenii**Delphineis surirella**Delphineis* spp.

Core, section, interval (cm)

U14 19.D.18Hec

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)*Denticulopsis crassa**Denticulopsis dimorpha* var. *dimorpha**Denticulopsis dimorpha* var. *areolata**Denticulopsis hustedtii**Denticulopsis hyalina**Denticulopsis katayamiae**Denticulopsis lauta**Denticulopsis praedimorpha* var. *minor**Denticulopsis praedimorpha* var. *praedimorpha**Denticulopsis praehyalina**Denticulopsis praekatayamiae**Denticulopsis praelata**Denticulopsis simonsenii**Denticulopsis tanimurae**Denticulopsis vulgaris**Denticulopsis* spp.*Diplotheleis bombus**Diplotheleis puella**Diplotheleis smithii**Diplotheleis suborbicularis**Diplotheleis* spp.*Distephanosira architecturalis**Distephanosira* spp.*Ellerbeckia sol**Ellerbeckia* spp.*Eunotia pectinalis* var. *minor**Eunotia praerupta* var. *praerupta**Eunotia* spp.*Fragilaria construens**Fragilaria* spp.*Fragilaropsis cylindrus**Fragilaropsis dololus**Fragilaropsis fossilis**Fragilaropsis oceanica**Fragilaropsis pilocana**Fragilaropsis* spp.*Goniothecium decoratum**Goniothecium rogersii**Grammatophora* spp.*Halamphora costata**Hyalodiscus obsoletus**Hyalodiscus* spp.*Ikebea tenuis**Kisseleviella carina**Kisseleviella ezoensis**Kolzumia tatsuokuchiensis**Kozloviella minor**Lisitzinia ornata**Medilaria magna**Medilaria splendida**Melosira albicans**Navicula eligensis**Navicula lyraoides**Navicula menisculus**Navicula salinarum**Neodenticula kamtschatka**Neodenticula kolzumii**Neodenticula seminaea**Nitzschia challengerii**Nitzschia joussea**Nitzschia palea**Nitzschia reinholdii**Nitzschia rolandii**Odontella aurita**Odontella* spp.*Paralia sulcata**Paralia* spp.*Podosira stelligera**Porosira glaciales**Proboscia barbol**Proboscia curvirostris**Proboscia interposta**Proboscia praebarbol**Pseudodimmerogramma elegans**Pseudonitzschia seriata**Pseudoxiphidium americanum**Pseudotriceratium radiosoreticulatum**Pyxidicula zabelinae**Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS*

Diatom zones (NPD)

Baren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

*Achnanthes groenlandica**Achnanthes inflata**Achnanthes lanceolata**Achnanthes lineariformis**Achnanthes spp.**Actinocyclus curvatus**Actinocyclus ellipticus**Actinocyclus ingens**Actinocyclus ingens f. nodus**Actinocyclus ingens f. planus**Actinocyclus ocellatus**Actinocyclus ochotensis**Actinocyclus octonarius**Actinocyclus robustus**Actinocyclus tsugaruensis**Actinocyclus spp.**Actinoptychus senarius**Actinoptychus vulgaris**Actinoptychus spp.**Araniscus lewisanus**Araniscus spp.**Asteromphalus darwinii**Asteromphalus oligocenicus**Asteromphalus parvulus**Asteromphalus robustus**Asteromphalus spp.**Azpeitia biradifida**Azpeitia komurae**Azpeitia nodulifera**Azpeitia oligocenica**Azpeitia praenodulifera**Azpeitia salisburyana**Azpeitia tabularis**Azpeitia vetustissima**Azpeitia spp.**Bacterosira bathyomphala**Bacterosira fragilis**Bacterosira spp.**Cavitalus exiguis**Cavitalus jouseanus**Cavitalus lanceolatus**Cavitalus linearis**Cavitalus mioceneus**Cavitalus rectus**Cavitalus spp.**Cestodiscus kugleri**Cestodiscus trochus**Cestodiscus spp.**Coccoeis californica**Coccoeis costata**Coccoeis scutellum**Coccoeis spp.**Coscindiscus asteromphalus**Coscindiscus marginatus**Coscindiscus oculus-iridis**Coscindiscus radiatus**Coscindiscus rhombicus**Coscindiscus symbolophorus**Cosmoldiscus insignis**Crucidenticula ikebei**Crucidenticula kanayae**Crucidenticula nicobarica**Crucidenticula paranicobarica**Crucidenticula sawamurae**Cyclotella striata**Cyclotella meneghiniana**Cyclotella spp.**Cymbella cistula**Cymbella minuta**Cymbella subaequalis**Cymbella spp.**Delphinella angustata**Delphinella ischaboenensis**Delphinella kippae**Delphinella sachalinensis**Delphinella simonsenii**Delphinella surrella**Delphinella spp.*

Core, section, interval (cm)

U14 19 D. 19 H CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetypina
Denticulopsis praeflatea
Denticulopsis simensem
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia declinata var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossile
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medioria magna
Medioria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminaea
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porusira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia serialis
Pseudoxysilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hemiclavis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopatica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praeoestrupili
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incravatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miccenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctetae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidiala divergens
Yoshidiala spp.

Chaetoceras Resting Spores

TOTAL of VEGETATIVE CELLS

SD Page -

Diatom zones (NPD)

vndet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens 1. nodus
Actinocyclus Ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus mioceneus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboenensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonisenii
Delphinella surrella
Delphinella spp.

Core, section, interval (cm)

U14 19.D.204c

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praethyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossile
Fragilaropsis oceanica
Fragilaropsis pilocana
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podostira stelligera
Podosira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearboi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessolata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupill
Shionodiscus paeoestrupill
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umiacensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 19D. 21 HCC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinophytus senarius
Actinophytus vulgaris
Actinophytus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bireadata
Azpeitia komureae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Caviflatus exiguis
Caviflatus jouseanus
Caviflatus lanceolatus
Caviflatus linearis
Caviflatus miocenicus
Caviflatus rectus
Caviflatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolorhus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surirella
Delphinella spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praethalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplothele bombus
Diplothele puelia
Diplothele smithii
Diplothele suborbicularis
Diplothele spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaria cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kolzumiella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elgivensis
Navicula lyrodes
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podostira stelligera
Porusira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbarbi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjimica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabeli
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

Bartlett

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Trace

Core, section, interval (cm)

U14 19D.231+cc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvis
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus micocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbiotophorus
Coscinodiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. dimorpha
Denticulopsis dimorpha var. areolata
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. minor
Denticulopsis praedimorpha var. praedimorpha
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilocema
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eliginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kantschikata
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbata
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. hiemalis
Rhizosolenia hebetata f. semispina
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvalum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Sponge T

Diatom zones (NPD)

Baren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Trace

Core, section, interval (cm)

U14 19.D.29/HC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadista
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguus
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surirella
Delphinella spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetypalmae
Denticulopsis praelata
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheleis bombus
Diplotheleis puella
Diplotheleis smithii
Diplotheleis suborbicularis
Diplotheleis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dolios
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilocoma
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbori
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopediastrum americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunwil
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioeldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetocerace Resting Spores

TOTAL OF VEGETATIVE CELLS

Sponge -

Diatom zones (NPD)

uncat.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugarunensis
Actinocyclus spp.
Actinoptychus senarius
Actinoptychus vulgaris
Actinoptychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatibus exiguus
Cavatibus jouseanus
Cavatibus lanceolatus
Cavatibus linearis
Cavatibus miocenicus
Cavatibus rectus
Cavatibus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmidiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawanurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surrella
Delphineis spp.

Core, section, interval (cm)

U14/19E-24-CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamiae
Denticulopsis praelata
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dolichos
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilicula
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kozuma tatsuokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eliginis
Navicula lyroides
Navicula menisculus
Navicula salinorum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia stelligera
Podosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudoxypilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norvegica
Rhizosolenia praebargentii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isoploca
Rouxia naviculoides
Rouxia obesa
Shalonodiscus oestrupii — /
Shalonodiscus praeoestrupii — /
Shionodiscus trifultus — /
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis — /
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa — /
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marumica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperis
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrich longissima
Thalassiotrich spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores X /

TOTAL OF VEGETATIVE CELLS

Sponge —
δ mm

Fest —

closed corolla

Diatom zones (NPD)

NPP 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 19, E, 3H2W100

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpellia bivalvata
Azpellia komurae
Azpellia nodulifera
Azpellia oligocenica
Azpellia praenodulifera
Azpellia salisburyana
Azpellia tabularis
Azpellia velutissima
Azpellia spp.
Bacterosira balthymopha
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguis
Cavatulus jousseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccneis californica
Coccneis costata
Coccneis scutellum
Coccneis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbiotrophicus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. dimorpha
Denticulopsis dimorpha var. areolata
Denticulopsis hustedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. minor
Denticulopsis praedimorpha var. praedimorpha
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tamaruae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Dislephanosira architecturalis
Dislephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. minor
Eunotia praerupta var. praerupta
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololios
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis plicena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lizitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae *EEF*
Nitzschia challengeri
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbori
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 18

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hemiclavis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isoploca
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praeoestrupili
// Shionodiscus trifilus *EE*
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschoides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira joussea
// Thalassiosira leptopus *T*
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira tempesi
Thalassiosira umaciensis
Thalassiosira undulosa
Thalassiosira yabei
// Thalassiosira spp. *T*
Thalassiothrix longissima
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores *EE* *II*TOTAL OF VEGETATIVE CELLS *97*

Sponge F *

Closed copula

Diatom zones (NPD)

undet.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)



Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinophytus senarius
Actinophytus vulgaris
Actinophytus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komrae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguum
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crudenticula ikebei
Crudenticula kanayae
Crudenticula nicobarica
Crudenticula paranicobarica
Crudenticula sawamurae
Cyclotella striata
Cyclotella menegehiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischabensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsonii
Delphinella surrella
Delphinella spp.

Core, section, interval (cm)

U14 19E-3H-CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis laeta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheis bombus
Diplotheis puella
Diplotheis smithii
Diplotheis suborbicularis
Diplotheis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolichus
Fragilariopsis fossilia
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
 Ikebea tenuis
Kieselovella carina
Kieselovella ezoensis
Kolzumia tatsunokuchiensis
Kolzoviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula alginensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kantschikata
Neodenticula kolzumii
Neodenticula seminas
 Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudoriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/13

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Roella gelida
Roella praenitida
Roella semigelida
Roella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
 Shionodiscus oestrupii T 2
Shionodiscus paeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
 Stephanopyxis turnis 1
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
 Thalassiosira dubiosa 1
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
 Thalassiosira gravida T 2
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marumica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Trachyneis spp.
Trachyneis aspera
Yoshidalia divergens
Yoshidalia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

fragments

closed opula
rest F

Diatom zones (NPD)

undet.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 19E - 6ft - 7C

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%) R (<2%), B (no diatoms)

DATE: 2013/July/13

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surirella
Delphinella spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetypalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossils
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebae tenius
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eliginis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratum radiosoreticulatum
Pyxidicula zabelinae

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebengonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praeintida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopistica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii T2
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunwil
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaloensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

not quite res

Diatom zones (NPD)

undet.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)



Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoptychus senarius
Actinoptychus vulgaris
Actinoptychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpellia biraedata
Azpellia komurae
Azpellia nodulifera
Azpellia oligocenica
Azpellia praenodulifera
Azpellia salisburyana
Azpellia tabularis
Azpellia vetustissima
Azpellia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavifatus exiguum
Cavifatus jouseanus
Cavifatus lanceolatus
Cavifatus linearis
Cavifatus miocenicus
Cavifatus rectus
Cavifatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellatum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crudicentula ikebei
Crudicentula kanayae
Crudicentula nicobarica
Crudicentula paranicobarica
Crudicentula sawanurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboenensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surrella
Delphinella spp.

Core, section, interval (cm)

U14 19E-9H-a

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamiae
Denticulopsis praelauta
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Diplolepis spp.
Diplolepis bombus
Diplolepis puella
Diplolepis smithii
Diplolepis suborbicularis
Diplolepis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilariopsis dololus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kotzuma tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia stelligera
Podosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopatica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marumajica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

fragments

6

Diatom zones (NPD)

NPV 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

G

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
*Achnanthes lineariformis**Achnanthes spp.**Actinocyclus curvatus**Actinocyclus ellipticus**Actinocyclus ingens**Actinocyclus ingens f. nodus**Actinocyclus ingens f. planus**Actinocyclus oculatus**Actinocyclus ochotensis**Actinocyclus octonarius**Actinocyclus robustus**Actinocyclus tsugaruensis**Actinocyclus spp.**Actinopytchus senarius**Actinopytchus vulgaris**Actinopytchus spp.**Araniscus lewisanus**Araniscus spp.**Asteromphalus darwinii**Asteromphalus oligocenicus**Asteromphalus parvulus**Asteromphalus robustus**Asteromphalus spp.**Azpeitia briadata**Azpeitia komurae**Azpeitia nodulifera**Azpeitia oligocenica**Azpeitia prenодulifera**Azpeitia salisburyana**Azpeitia tabularis**Azpeitia vetustissima**Azpeitia spp.**Bacterosira bathyomphala**Bacterosira fragilis**Bacterosira spp.**Cavilatus exiguum**Cavilatus jouseanus**Cavilatus lanceolatus**Cavilatus linearis**Cavilatus mioceneicus**Cavilatus rectus**Cavilatus spp.**Cestodiscus kugleri**Cestodiscus trochus**Cestodiscus spp.**Coccineis californica**Coccineis costata**Coccineis scutellum**Coccineis spp.**Coscinodiscus asteromphalus**Coscinodiscus marginatus**Coscinodiscus oculus-iridis**Coscinodiscus radiatus**Coscinodiscus rhombicus**Coscinodiscus symphophorus**Cosmolodiscus insignis**Crucidenticula ikebei**Crucidenticula kanayae**Crucidenticula nicobarica**Crucidenticula paranicobarica**Crucidenticula sawamurae**Cyclotella striata**Cyclotella meneghiniana**Cyclotella spp.**Cymbella cistula**Cymbella minuta**Cymbella subaequalis**Cymbella spp.**Delphineis angustata**Delphineis ischaboenensis**Delphineis kippae**Delphineis sachalinensis**Delphineis simonsonii**Delphineis surirella**Delphineis spp.*

Core, section, Interval (cm)

U14 19E - 11H - 0C

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

- Denticulopsis crassa*
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praetexta
Denticulopsis simonsonii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploaneis bombus
Diploaneis puelia
Diploaneis smithii
Diploaneis suborbicularis
Diploaneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilariopsis dolichos
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilosa
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Ikeba tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kotzuma tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medioria magna
Medioria splendida
Melosira albicans
Navicula eliginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challenger
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudoxypilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

- Rhaphoneis amphiceros*
Rhaphoneis spp.
Rhizosolenia hebetata I. *hiemalis*
Rhizosolenia hebetata I. *semispina*
Rhizosolenia norvegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isoploca
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii EF 9
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunwil
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira lyraea
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabai
Thalassiosira spp. T 2
Thalassiothrix longissima
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.
Chaetoceros Resting Spores 19
TOTAL of VEGETATIVE CELLS 18

Diatom zones (NPD)

B

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoptychus senarius
Actinoptychus vulgaris
Actinoptychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surrella
Delphineis spp.

Core, section, interval (cm)

U14 (9E - 13H - CC)

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelutea
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dolichus
Fragilaropsis fossilia
Fragilaropsis oceanica
Fragilaropsis pilocana
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kozumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula alginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamschatkica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixille americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 13

OBSERVER'S NAME *AF* SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *semispina*
Rhizosolenia hebetata f. *hemiatalis*
Rhizosolenia norwegica
Rhizosolenia praesbergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praecostrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Surrella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira menjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidalia divergens
Yoshidalia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

fragile

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

全面観察

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugariensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia prenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguum
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsoni
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 19 E 14H-CC

DATE: 2013/July/ 1x

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsoni
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheleis bombus
Diplotheleis puelia
Diplotheleis smithii
Diplotheleis suborbicularis
Diplotheleis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilariopsis dololus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kozumiella tatsuokuchii
Kozumiella minor
Lisitzinia ornata
Medularia magna
Medularia splendida
Melosira albicans
Navicula eliginis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae F
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella australis
Odontella spp.
Paralia sulcata
Paralia spp.
Podostira stelligera
Porusa glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbarbi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudoxiphilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

R 3 Chaetoceros Resting Spores T

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good) M (moderate), P (poor)

Core, section, interval (cm)

U14 19E - 15H - 1W, 90cm

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.

R B
Actinocyclus curvatus T
Actinocyclus ellipticus

Actinocyclus ingens
Actinocyclus ingens f. nodus

Actinocyclus ingens f. planus

Actinocyclus oculatus

Actinocyclus ochotensis

Actinocyclus octonarius

Actinocyclus robustus

Actinocyclus tsugaruensis

Actinocyclus spp.

Actinoptychus senarius

Actinoptychus vulgaris

Actinoptychus spp.

Araniscus lewisianus

Araniscus spp.

Asteromphalus darwinii

Asteromphalus oligocenicus

Asteromphalus parvulus

Asteromphalus robustus

Asteromphalus spp.

Azpeitia biraedata

Azpeitia komurae

R 2 T

Azpeitia nodulifera

Azpeitia oligocenica

Azpeitia praenodulifera

Azpeitia salisburyana

Azpeitia tabularis

Azpeitia vetustissima

Azpeitia spp.

Bacterosira bathyomphala

Bacterosira fragilis

Bacterosira spp.

Cavatulus exiguus

Cavatulus jouseanus

Cavatulus lanceolatus

Cavatulus linearis

Cavatulus miocenicus

Cavatulus rectus

Cavatulus spp.

Cestodiscus kugleri

Cestodiscus trochus

Cestodiscus spp.

Coccineis californica

R 1 —

Coccineis costata

Coccineis scutellatum

Coccineis spp.

Coscinodiscus asteromphalus

Coscinodiscus marginatus

Coscinodiscus oculus-iridis

Coscinodiscus radiatus

Coscinodiscus rhombicus

Coscinodiscus symbolophorus

Cosmolodiscus insignis

Crucidenticula ikebei

Crucidenticula kanayae

Crucidenticula nicobarica

Crucidenticula paranicobarica

Crucidenticula sawamurae

Cyclotella striata

Cyclotella meneghiniana

Cyclotella spp.

Cymbella cistula

Cymbella minuta

Cymbella subaequalis

Cymbella spp.

Delphineis angustata

Delphineis ischaboensis

Delphineis kippae

Delphineis sachalinensis

Delphineis simonsoni

Delphineis surirella

Delphineis spp.

closed. siliceous Diatoms

4.0 5.0

130 164

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%); B' (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Diploaneis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariaopsis cylindrus —
Fragilariopsis dololus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilosa
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus —
Hyalodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kotzuma tatsuokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans T
Navicula elginiensis
Navicula lyrodes
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae EEEEEE — T
Nitzschia challenger
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata EEE
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudoxiphidium americanum
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 15

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata I. *hiemalis* T
Rhizosolenia hebetata I. *semispina*

Rhizosolenia praebargentii

Rhizosolenia setigera

Rhopas spp.

Roperia tessellata

Rocella gelida

Rocella praenitida

Rocella semigelida

Rocella vigilans

Rouxia californica

Rouxia granda

Rouxia isoploca

Rouxia naviculoides

Rouxia obesa

Shionodiscus oestrupii T

Shionodiscus praesoestrupii

Shionodiscus trifultus —

Stephanopyxis dimorpha

Stephanopyxis horridus

Stephanopyxis turris —

Stephanopyxis spp. EE

Suriella spp.

Thalassionema bacillaris

Thalassionema nitzschioides TTTT

Thalassionema nitzschioides var. *incurvatum*

Thalassionema nitzschioides var. *infatum*

Thalassionema nitzschioides var. *parvum*

Thalassionema pseudonitzschioides

Thalassionema schraderi

Thalassionema spp.

Thalassiosira antiqua

Thalassiosira bioculata

Thalassiosira castanea

Thalassiosira convexa

Thalassiosira decipiens

Thalassiosira dubiosa

Thalassiosira eccentrica

Thalassiosira fasciculata

Thalassiosira fraga

Thalassiosira gravida

Thalassiosira grunowii

Thalassiosira hyalina

Thalassiosira irregularis

Thalassiosira jacksonii

Thalassiosira jouseae

Thalassiosira leptopus

Thalassiosira lineata

Thalassiosira lusca

Thalassiosira manifesta

Thalassiosira marumajica

Thalassiosira mediaconvexa

Thalassiosira minutissima

Thalassiosira miocenica

Thalassiosira nordenstkioldii

Thalassiosira orientalis

Thalassiosira praefraga

Thalassiosira praenidulus

Thalassiosira praeybabei

Thalassiosira robusta

Thalassiosira sanctetiae

Thalassiosira singularis

Thalassiosira temperata

Thalassiosira umaoensis

Thalassiosira undulosa

Thalassiosira yabei

Thalassiotrichia spp.

Trachyneis aspera

Trachyneis spp.

Yoshidaia divergens

Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS 100

45
 C 189 / 100
 EEEEEE
 EEEEEE
 EEEEEE
 EEEEEE

closed.

siliceous Diatoms

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus T
Actinocyclus ellipticus
Actinocyclus engens
Actinocyclus engens f. nodus
Actinocyclus engens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadifata
Azpeitia komurae T
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala —
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguum
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crudicentula ikebei
Crudicentula kanayae
Crudicentula nicobarica
Crudicentula paranicobarica
Crudicentula sawanuriae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsoni
Delphineis surrella
Delphineis spp.

Core, section, interval (cm)

U14 19E - 15H-2W, 10 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%) / B (no diatoms)

DATE: 2013/July/ 15

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

R 1 *Rhaphoneis amphiceros* —
Rhaphoneis spp.
Rhizosolenia hebetata f. hemisphaerica T
Rhizosolenia hebetata f. semispina
Rhizosolenia norvegica
Rhizosolenia praebengonii

Rhizosolenia setigera
Rhizosolenia spp.

Roperia tesselata

Rocella gelida

Rocella praenitida

Rocella semigelida

Rocella vigilans

Rouxia californica

Rouxia granda

Rouxia isoploca

Rouxia naviculoides

Rouxia obesa

Shionodiscus oestrupii

Shionodiscus paeoestrupii

Shionodiscus trifultus T

Stephanopyxis dimorpha

Stephanopyxis horridus

Stephanopyxis turnis

Stephanopyxis spp. T

Suriella spp.

Thalassionema bacillaris

Thalassionema nitzschioides T

Thalassionema nitzschioides var. incurvatum

Thalassionema nitzschioides var. inflatum

Thalassionema nitzschioides var. parvum

Thalassionema pseudonitzschioides

Thalassionema schraderi

Thalassionema spp.

Thalassiosira antiqua

Thalassiosira bioculata

Thalassiosira castanea

Thalassiosira convexa

Thalassiosira decipiens

Thalassiosira dubiosa

Thalassiosira eccentrica

Thalassiosira fasciculata

Thalassiosira fraga

Thalassiosira gravida T

Thalassiosira grunowii

Thalassiosira hyalina

Thalassiosira irregularis

Thalassiosira jacksonii

Thalassiosira jouseae

Thalassiosira leptopus

Thalassiosira lineata

Thalassiosira lusca

Thalassiosira manifesta

Thalassiosira marujamica

Thalassiosira mediaconvexa

Thalassiosira minutissima

Thalassiosira miocenica

Thalassiosira nordenstkioldii

Thalassiosira orientalis

Thalassiosira praefraga

Thalassiosira praenidulus

Thalassiosira praeybabei

Thalassiosira robusta

Thalassiosira sanctetiae

Thalassiosira singularis

Thalassiosira temperata

Thalassiosira umaoensis

Thalassiosira undulosa

Thalassiosira yabaei

Thalassiosira spp. —

Thalassiothrix longissima

Trachyneis spp.

Trachyneis spp.

Yoshidaia divergens

Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

100

39/100

closed Dino Silice sponge

5/13/12 13/13

184

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadifata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus mioceneus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonserii
Delphineis surrella
Delphineis spp.

Core, section, interval (cm)

U14 19E - 15H-2W, 100 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *arcuata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetypalina
Denticulopsis praekatayamiae
Denticulopsis praelauta
Denticulopsis simensem
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheleis bombus
Diplotheleis puelia
Diplotheleis smithii
Diplotheleis suborbicularis
Diplotheleis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dolichos
Fragilaropsis fossilis
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kiseleviella carina
Kiseleviella ezoensis
Kotzuma tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jousseaes
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Podosira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudoduxyilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/18

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

R 1
Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hemicarpa*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargentii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praeoestrupili
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidiala divergens
Yoshidiala spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

T
3

22576 = 77%

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

X Achnanthes groenlandica

Achnanthes inflata

Achnanthes lanceolata

Achnanthes lineariformis

Achnanthes spp.

X Actinocyclus curvatus +

Actinocyclus ellipticus

Actinocyclus ingens

Actinocyclus ingens 1. nodus

Actinocyclus ingens 1. planus

Actinocyclus oculatus

Actinocyclus ochotensis

Actinocyclus octonarius

Actinocyclus robustus

Actinocyclus tsugaruensis

Actinocyclus spp.

Actinopychus senarius

Actinopychus vulgaris

Actinopychus spp.

R Araniscus lewisianus

Araniscus spp.

Asteromphalus darwinii

Asteromphalus oligocenicus

Asteromphalus parvulus

Asteromphalus robustus

Asteromphalus spp.

Azpeitia biradiata

Azpeitia komrae

Azpeitia nodulifera

Azpeitia oligocenica

Azpeitia praenodulifera

Azpeitia salisburyana

Azpeitia tabularis

Azpeitia vetustissima

Azpeitia spp.

Bacterosira bathyomphala

Bacterosira fragilis

Bacterosira spp.

Cavilitus exiguum

Cavilitus jouseanus

Cavilitus lanceolatus

Cavilitus linearis

Cavilitus miocenicus

Cavilitus rectus

Cavilitus spp.

R Cestodiscus kugleri T 2

Cestodiscus trochus

Cestodiscus spp.

Coccoeis californica

Coccoeis costata

Coccoeis scutellum

Coccoeis spp.

Coscinodiscus asteromphalus

Coscinodiscus marginatus

Coscinodiscus oculus-iridis

Coscinodiscus radiatus

Coscinodiscus rhombicus

Coscinodiscus symblophorus

Cosmodiscus insignis

Crucidenticula ikebei

Crucidenticula kanayae

Crucidenticula nicobarica

Crucidenticula paranicobarica

Crucidenticula sawamurae

Cyclotella striata

Cyclotella meneghiniana

Cyclotella spp.

Cymbella cistula

Cymbella minuta

Cymbella subaequalis

Cymbella spp.

Delphineis angustata

Delphineis ischaboensis

Delphineis kippae

Delphineis sachalinensis

Delphineis simonensis

Delphineis surrella

Delphineis spp.

(S 0.8 → 1.0

closed crop.
Siliro
Dino
sponge T
foram.

Core, section, interval (cm)

U14/19F - 15H - CC

TOTAL ABUNDANCE:

M (>60%), A (>20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa

Denticulopsis dimorpha var. dimorpha

Denticulopsis dimorpha var. areolata

Denticulopsis hustedtii

Denticulopsis hyalina

Denticulopsis katayamae

Denticulopsis lauta

Denticulopsis praedimorpha var. minor

Denticulopsis praedimorpha var. praedimorpha

Denticulopsis praehyalina

Denticulopsis praekatayamae

Denticulopsis praelauta

Denticulopsis simonsenii

Denticulopsis tanimurae

Denticulopsis vulgaris

Denticulopsis spp.

Diploneis bombus

Diploneis puelia

Diploneis smithii

Diploneis suborbicularis

Diploneis spp.

Distephanosira architecturalis

Distephanosira spp.

Ellerbeckia sol

Ellerbeckia spp.

Eunotia pedinalis var. minor

Eunotia praerupta var. praerupta

Eunotia spp.

Fragilaria construens

Fragilaria spp.

Fragilariopsis cylindrus

Fragilariopsis dolichus

Fragilariopsis fossilis

Fragilariopsis oceanica

Fragilariopsis pilocema

Fragilariopsis spp.

Goniothecium decoratum

Goniothecium rogersii

Goniothecium spp.

Grammatophora spp.

Halamphora costata

Hyalodiscus obsoletus

Hyalodiscus spp.

Ikeba tenuis

Kisseleviella carina

Kisseleviella ezoensis

Kolzumia tatsunokuhiensis

Kolzoviella minor

Listinia ornata

Medaria magna

Medaria splendida

Melosira albicans

Navicula elginiensis

Navicula lyroides

Navicula menisculus

Navicula salinarum

Nitzschia palea

Nitzschia reinholdii

Nitzschia rolandi

Odontella aurita

Odontella spp.

Paralia sulcata

Podosira stelligera

Porosira glacialis

Proboscia barbol

Proboscia curvirostris

Proboscia interposita

Proboscia praearboroi

Pseudodimmericratera elegans

Pseudonitzschia seriata

Pseudopityxilla americana

Pseudotriceratium radiosoreticulatum

Pyxidicula zabeliae

DATE: 2013/July/13

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)

F (>1 vlv/10FOVs & <1 vlv/10FOVs)

R (>3 vlv/traverse & <1 vlv/10FOVs)

X (present), B (barren)

Raphoneis amphiceros

Raphoneis spp.

Rhizosolenia hebetata f. hemispha

Rhizosolenia hebetata f. semispina

Rhizosolenia norwegica

Rhizosolenia praesbergoni

Rhizosolenia setigera

Ropertia tessellata

Rocella gelida

Rocella praenitida

Rocella semigelida

Rocella vigilans

Rouxia californica

Rouxia granda

Rouxia isoplica

Rouxia naviculoides

Rouxia obesa

R Shionodiscus ostrupli

R Shionodiscus praeostrupli

R Shionodiscus trifolius

R Stephanopyxis dimorpha

R Stephanopyxis horridus

R Stephanopyxis turris

R Stephanopyxis spp.

Surrella spp.

Thalassionema bacillaris

Thalassionema nitzschiooides

Thalassionema nitzschiooides var. incurvatum

X Thalassionema nitzschiooides var. inflatum

Thalassionema nitzschiooides var. parvum

Thalassionema pseudonitzschiooides

Thalassionema schraderi

Thalassionema spp.

Thalassiosira antiqua

Thalassiosira bioculata

Thalassiosira castanea

Thalassiosira convexa

Thalassiosira decipiens

Thalassiosira dubiosa

Thalassiosira eccentrica

Thalassiosira fasciculata

Thalassiosira fraga

Thalassiosira gravida

Thalassiosira grunowii

Thalassiosira hyalina

Thalassiosira irregularis

Thalassiosira jacksonii

Thalassiosira jouseana

Thalassiosira leptopus

Thalassiosira lineata

Thalassiosira lusca

Thalassiosira manifesta

Thalassiosira marujamica

Thalassiosira mediaconvexa

Thalassiosira minutissima

Thalassiosira miocenica

Thalassiosira norderskioldii

Thalassiosira orientalis

Thalassiosira praefraga

Thalassiosira praenudulus

Thalassiosira praeybabei

Thalassiosira robusta

Thalassiosira sanctaeiae

Thalassiosira singularis

Thalassiosira temporalis

Thalassiosira umaoensis

Thalassiosira undulosa

Thalassiosira yaboi

Thalassiosira spp.

Thalassiotrix longissima

Trachyneis aspera

Trachyneis spp.

Yoshidaia divergens

Yoshidaia spp.

C 339 000

00

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

(G (good), M (moderate), P (poor))

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
R 1 Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Apeltes biradiata
Azpeitia komurae
R 2 Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmolodiscus insignis
Crucidiscula ikebei
Crucidiscula kanayae
Crucidiscula nicobarica
Crucidiscula paranicobarica
Crucidiscula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinis angustata
Delphinis ischaboensis
Delphinis kippae
Delphinis sachalinensis
Delphinis simonsenii
Delphinis surirella
Delphinis spp.

Core, section, interval (cm)

U14 19 E - 16 H - 1 W, 18 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 15

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

*Rhaphoneis amphiceros**Rhaphoneis spp.**Rhizosolenia hebetata f. hiemalis**Rhizosolenia norwegica**Rhizosolenia paebergonii**Rhizosolenia setigera**Rhizosolenia spp.**Roparia tessellata**Rocella gelida**Rocella praenitida**Rocella semigelida**Rocella vigilans**Rouxia californica**Rouxia granda**Rouxia isoploca**Rouxia naviculoides**Rouxia obesa**Rhionodiscus oestrupii**Rhionodiscus paeoestrupii**Rhionodiscus trifolius**Stephanopyxis dimorpha**Stephanopyxis horridus**Stephanopyxis turris**Stephanopyxis spp.**Suirella spp.**Thalassionema bacillaris**Thalassionema nitzschiooides**Thalassionema nitzschiooides var. incurvatum**Thalassionema nitzschiooides var. inflatum**Thalassionema nitzschiooides var. parvum**Thalassionema pseudonitzschiooides**Thalassionema schraderi**Thalassionema spp.**Thalassiosira antiqua**Thalassiosira bioculata**Thalassiosira castanea**Thalassiosira convexa**Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica**Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida**Thalassiosira grunwilii**Thalassiosira hyalina**Thalassiosira irregularis**Thalassiosira jacksonii**Thalassiosira jouseae**Thalassiosira leptopus**Thalassiosira lineata**Thalassiosira lusca**Thalassiosira manifesta**Thalassiosira marujamica**Thalassiosira mediaconvexa**Thalassiosira minutissima**Thalassiosira miocenica**Thalassiosira nordenskioldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenidulus**Thalassiosira praeybabeli**Thalassiosira robusta**Thalassiosira sanctetiae**Thalassiosira singularis**Thalassiosira temperata**Thalassiosira umaciensis**Thalassiosira undulosa**Thalassiosira yabei**Thalassiothrix longissima**Thalassiothrix spp.**Trachyneis aspera**Trachyneis spp.**Yoshidaiia divergens**Yoshidaiia spp.**Chaetoceros Resting Spores**TOTAL OF VEGETATIVE CELLS*

closed up
 105/38 179/67
 ← 8.0 → 9.0 10.0

silico Dm

248/100



100

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

R 4

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biraedita
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitas exiguum
Cavitas jouseanus
Cavitas lanceolatus
Cavitas linearis
Cavitas miocenicus
Cavitas rectus
Cavitas spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscindiscus asteromphalus
Coscindiscus marginatus
Coscindiscus oculus-iridis
Coscindiscus radiatus
Coscindiscus rhombicus
Coscindiscus symbolophorus
Cosmoldiscus insignis
Crudicentula ikebei
Crudicentula kanayae
Crudicentula nicobarica
Crudicentula paranicobarica
Crudicentula sawanurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Deltipheneis angustata
Deltipheneis ischabonis
Deltipheneis kippae
Deltipheneis sachalinensis
Deltipheneis simonsenii
Deltipheneis surrella
Deltipheneis spp.

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Core, section, interval (cm)

U14 19E 17H-1W 100cm

DATE: 2013/July/15

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

R 5 Rhaphoneis amphiceros T
R 1 Rhizosolenia hebetata f. hemispina

Rhizosolenia hebetata f. semispina

Rhizosolenia norwegica

Rhizosolenia praebengonii

Rhizosolenia setigera

Rhizosolenia spp.

Roperia tessellata

Rocella gelida

Rocella praenitida

Rocella semigelida

Rocella vigilans

Rouxia californica

Rouxia granda

Rouxia isoploca

Rouxia naviculoides

Rouxia obesa

Shalonodiscus oestrupli T

Shalonodiscus praecostrupli

Shionodiscus trifultus

Stephanopyxis dimorpha

Stephanopyxis horridus

Stephanopyxis turnis

Stephanopyxis spp. T

Surirella spp.

Thalassionema bacillaris

Thalassionema nitzschioides

Thalassionema nitzschioides var. incurvatum

Thalassionema nitzschioides var. inflatum

Thalassionema nitzschioides var. parvum

Thalassionema pseudonitzschioides

Thalassionema schraderi

Thalassionema spp.

Thalassiosira antiqua

Thalassiosira bioculata

Thalassiosira castanea

Thalassiosira convexa

Thalassiosira decipiens

Thalassiosira dubiosa

Thalassiosira eccentrica

Thalassiosira fasciculata

Thalassiosira fraga

Thalassiosira gravida *

Thalassiosira grunowii

Thalassiosira hyalina

Thalassiosira irregularis

Thalassiosira jacksonii

Thalassiosira jouseae

Thalassiosira leptopus *

Thalassiosira lineata *

Thalassiosira lusca

Thalassiosira manifesta

Thalassiosira marumajica

Thalassiosira mediaconvexa

Thalassiosira minutissima

Thalassiosira miocenica

Thalassiosira nordenstkioldii

Thalassiosira orientalis

Thalassiosira praefraga

Thalassiosira praenidulus

Thalassiosira praeybabei

Thalassiosira robusta

Thalassiosira sanctae

Thalassiosira singularis

Thalassiosira temperat

Thalassiosira umaoensis

Thalassiosira undulosa

Thalassiosira yabei

Thalassiosira spp. T

Thalassiotrichia longissima

Trachyneis spp.

Yoshidiala divergens

Yoshidiala spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

closed Silic Dino sponge

5.0 2.0 5.0 8.0 3.0
17/26 28/46 41/71 59/85

100

67

Diatom zones (NPD)

undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

- Achnanthes groenlandica*
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biraedata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus mioceneus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinis angustata
Delphinis ischaboenensis
Delphinis kippae
Delphinis sachalinensis
Delphinis simonisenii
Delphinis surirella
Delphinis spp.

ab sed cop

Dino

Core, section, interval (cm)

U14 198-174 in 130 m

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

全箇所欠乏

- Denticulopsis crassa*
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *arcuata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praethyalina
Denticulopsis praekatayamiae
Denticulopsis praelata
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplolepis bombus
Diplolepis puelia
Diplolepis smithii
Diplolepis suborbicularis
Diplolepis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossile
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolizuma tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligensis
Navicula lyroidea
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podostira stelligera
Podosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearboi
Pseudodimorpha elegans
Pseudonitzschia serialis
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 15

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

- Rhaphoneis amphiceros*
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargentii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
R 2 Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
R 3 Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marumjica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctettiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umiacensis
Thalassiosira undulosa
Thalassiosira yaboi
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidiala divergens
Yoshidiala spp.

R 2 Chaetoceros Resting Spores T
TOTAL OF VEGETATIVE CELLS

15

Diatom zones (NPD)

undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)
FRAGMENTS

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bireadata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawanurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinaria angustata
Delphinaria ischaboonensis
Delphinaria kippae
Delphinaria sachalinensis
Delphinaria simonisenii
Delphinaria surrella
Delphinaria spp.

Core, section, interval (cm)

U14 198 17H-2W 15cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)*全面大江**Denticulopsis crassa**Denticulopsis dimorpha* var. *dimorpha**Denticulopsis dimorpha* var. *areolata**Denticulopsis hustedtii**Denticulopsis hyalina**Denticulopsis katayamiae**Denticulopsis lauta**Denticulopsis praedimorpha* var. *minor**Denticulopsis praedimorpha* var. *praedimorpha**Denticulopsis prashyalina**Denticulopsis preakatayamiae**Denticulopsis praelata**Denticulopsis simonsenii**Denticulopsis tanimurae**Denticulopsis vulgaris**Denticulopsis spp.**Diploneis bombus**Diploneis puella**Diploneis smilii**Diploneis suborbicularis**Diploneis spp.**Distephanosira architecturalis**Distephanosira spp.**Ellerbeckia sol**Ellerbeckia spp.**Eunotia pectinalis* var. *minor**Eunotia praerupta* var. *praerupta**Eunotia spp.**Fragilaria construens**Fragilaria spp.**Fragilariopsis cylindrus**Fragilariopsis dolicius**Fragilariopsis fossili**Fragilariopsis oceanica**Fragilariopsis pilocana**Fragilariopsis spp.**Goniothecium decoratum**Goniothecium rogersii**Grammatophora spp.**Halamphora costata**Hyalodiscus obsoletus**Hyalodiscus spp.**Ikebea tenuis**Kisseleviella carina**Kisseleviella ezoensis***Kozumiella tatsunokuchiensis***Kozloviella minor**Lisitzinia ornata**Medilaria magna***Medilaria splendida***Melosira albicans**Navicula algrenensis**Navicula lyraoides**Navicula menisculus**Navicula salinarum***Neodenticula kantschikata****Neodenticula kolzumii****Neodenticula seminae***Nitzschia challengerii***Nitzschia joussea***Nitzschia palea***Nitzschia reinholdii****Nitzschia rolandii***Odontella aurita**Odontella spp.**Paralia sulcata**Paralia spp.**Podosira stelligera**Podosira glacialis***Proboscia barbol****Proboscia curvirostris***Proboscia interposita**Proboscia praearboi**Pseudodimmerogramma elegans**Pseudonitzschia serialis**Pseudopixylla americana**Pseudotriceratium radiosoreticulatum***Pyxidicula zabelinae**

DATE: 2013/July/ 15

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

*Raphoneis amphiceros**Raphoneis spp.**Rhizosolenia hebetata* f. *hiemalis**Rhizosolenia hebetata* f. *semispina**Rhizosolenia norwegica***Rhizosolenia praesbergoni***Rhizosolenia setigera**Rhizosolenia spp.**Roperia tessellata**Rocella gelida**Rocella praenitida**Rocella semigelida**Rocella vigilans***Rouxia californica***Rouxia granda**Rouxia isopolica**Rouxia naviculoides**Rouxia obesa***Shionodiscus oestrupli****Shionodiscus praecoestupli***Shionodiscus trifultus**Stephanopyxis dimorpha***Stephanopyxis horridus***Stephanopyxis turris**Stephanopyxis spp.**Suriella spp.**Thalassionema bacillaris**Thalassionema nitzschioides**Thalassionema nitzschioides* var. *incurvatum**Thalassionema nitzschioides* var. *infatum**Thalassionema nitzschioides* var. *parvum**Thalassionema pseudonitzschioidea***Thalassionema schraderi***Thalassionema spp.***Thalassiosira antiqua***Thalassiosira bioculata***Thalassiosira castanea****Thalassiosira convexa***Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica**Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida***Thalassiosira grunowii***Thalassiosira hyalina**Thalassiosira irregularis***Thalassiosira jacksonii****Thalassiosira jouseae***Thalassiosira leptopus**Thalassiosira lineata**Thalassiosira lusca**Thalassiosira manifesta***Thalassiosira merulamica***Thalassiosira mediaconvexa***Thalassiosira minutissima***Thalassiosira miocenica**Thalassiosira nordenskioldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenudulus**Thalassiosira praeyabei**Thalassiosira robusta**Thalassiosira sanctaeiae***Thalassiosira singularis****Thalassiosira temporis***Thalassiosira umiacensis**Thalassiosira undulosa***Thalassiosira yabei***Thalassiosira spp.**Thalassiothrix longissima**Trachyneis aspera**Trachyneis spp.**Yoshidaia divergens**Yoshidaia spp.***Chaetoceros Resting Spores****TOTAL of VEGETATIVE CELLS**

Diatom zones (NPD)

undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

C

Core, section, interval (cm)

U14 19E 17H-2W, 40cm

TOTAL ABUNDANCE:
M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms) 全面欠乏

DATE: 2013/July/ 15

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus engens
Actinocyclus engens f. nodus
Actinocyclus engens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpellia briadata
Azpellia komurae
Azpellia nodulifera
Azpellia oligocenica
Azpellia praenodulifera
Azpellia salisburyana
Azpellia tabularis
Azpellia velutissima
Azpellia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavithus exiguis
Cavithus jouseanus
Cavithus lanceolatus
Cavithus linearis
Cavithus mioceneicus
Cavithus rectus
Cavithus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolorhus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboonensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamiae
Denticulopsis praelata
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolios
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilcorna
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Iketea tenula
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porusira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudoxiphidium americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Roccella gelida
Roccella praenitida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus praeoestrupil
Shionodiscus trifulus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvalum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunwil
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaciensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Sponge Rods Form
 Crypt

Diatom zones (NPD)

undet.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 19E - 17H-2W 100cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

全頁欠

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadista
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinia angustata
Delphinia ischaboensis
Delphinia kippae
Delphinia sachalinensis
Delphinia simonsenii
Delphinia surirella
Delphinia spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetylina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplothele bombus
Diplothele puella
Diplothele smithii
Diplothele suborbicularis
Diplothele spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossils
Fragilaropsis oceanica
Fragilaropsis pilocoma
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenius
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medularia magna
Medularia splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudodyspilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 14

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopistica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
R | Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunwil
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
R | Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira preyabeii
Thalassiosira robusta
Thalassiosira sanctetteae
Thalassiosira singularis
Thalassiosira tempesi
Thalassiosira umaciensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Spong

Diatom zones (NPD)

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira balthyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguus
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinia angustata
Delphinia ischaboensis
Delphinia kippae
Delphinia sachalinensis
Delphinia simonsenii
Delphinia surirella
Delphinia spp.

Core, section, interval (cm)

U14 19E-10H-cc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetypalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheia bombus
Diplotheia puelia
Diplotheia smithii
Diplotheia suborbicularis
Diplotheia spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossils
Fragilaropsis oceanica
Fragilaropsis pilocoma
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Poresira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbori
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata I. *semispina*
Rhizosolenia norvegica
Rhizosolenia praebargentii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praeoestrupili
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaciensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

*Chaetoceros Resting Spores**TOTAL OF VEGETATIVE CELLS*

Diatom zones (NPD)

B

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Core, section, interval (cm)

U14 19E - 19H - CC

DATE: 2013/July/ 13

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
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Actinocyclus ingens f. nodus
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Delphinella sachalinensis
Delphinella simonsenii
Delphinella surrella
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Denticulopsis praekatayamae
Denticulopsis praelata
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*Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS*